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EXAMINER	
TIMORY, KABIR A	

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2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/820,440	Applicant(s) GARDNER ET AL.	
	Examiner Kabir A. Timory	Art Unit 2611	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 16 November 2007.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20,22-29 and 31-35 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-3,6-20,22-28 and 31-35 is/are rejected.

7)☐ Claim(s) 4,5 and 29 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 26 August 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-20, 22-29and 31-35 have been considered but are moot in view of new ground(s) of rejection.

2. The objections to the drawings are clarified by the amendment. Therefore, the objections are withdrawn.

3. The objections to the claims are corrected by the amendment. Therefore, the objections are withdrawn.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 6-8, 10-12, 20, 22-23, 28, and 31-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Crawford et al. (US 2002/0160737).

Regarding claim 1:

As shown in figures 1-13, Crawford et al. discloses a method of transmitting signals using a plurality of transmit antennas, the method comprising:

- allocating the data to be transmitted among the plurality of transmit antennas (102 in figure 1), wherein at least one of the plurality of transmit antennas transmits some data that is not transmitted by all of the other of the plurality of transmit antennas (101 in figure 1);
- transmitting a modified preamble (322 in figure 5) from each of the plurality of transmit antennas (102 in figure 1), wherein the modified preamble has a conventional 802.11a preamble structure (300 in figure 5) and is distinguishable at a receiver from a conventional 802.11a preamble (par 0055, lines 1-12, par 0057, lines 1-19).

Regarding claim 2:

Crawford et al. further discloses wherein the plurality of transmitters transmit data in total at an extended rate above a corresponding 802.11 a data rate (par 0056, lines 1-8).

Regarding claim 3:

Crawford et al. further discloses wherein the modified preamble comprises a modified long training (long OFDM symbols is interpreted to be long training pattern)

pattern distinct from a conventional 802.11 a long training pattern (308 in figure 5, par 0056, lines 1-8).

Regarding claim 6:

As shown in figures 1-13, Crawford et al. discloses a method of discriminating between a packet sent with a conventional 802.11 a rate or with an extended rate, comprising:

- receiving one or more signals from one or more transmitters (102 in figure 1), the one or more signals including a long training subcarrier (figure 1, par 0118, lines 1-8);
- multiplying the long training subcarrier (long OFDM symbols is interpreted to be long training pattern) with a conventional 802.11 a long training pattern to form a first product (308 in figure 5);
- multiplying the long training subcarrier (long OFDM symbols is interpreted to be long training pattern) with an extended 802.11 a long training pattern to form a second product (322 in figure 5);
- determining, from the first product and the second product, which long training pattern was more likely to have been sent for the received long training subcarrier (figures 5 and 6); and
- discriminating (sub-carrier selection diversity module is interpreted to discriminating as to which type of packet was sent) (108 in figure 1) as to which type of packet was sent based on the more likely sent long training subcarrier (long OFDM symbols is

interpreted to be long training pattern) with an extended 802.11 a long training pattern to form a second product (322 in figure 5).

Regarding claim 7:

As shown in figures 1-13, Crawford et al. discloses a method of transmitting signals using a plurality of transmit channels, the method comprising:

- allocating the data to be transmitted among the plurality of transmit channels (102 in figure 1), wherein at least one of the plurality of transmit channels transports some data that is not transmitted over all of the other of the plurality of transmit channels(101 in figure 1);
- transmitting a modified preamble from each of the plurality of transmit channels (322 in figure 5), wherein the modified preamble is distinguishable at a receiver from a conventional 802.1 la preamble (par 0055, lines 1-12, par 0057, lines 1-19) and includes an out-of-band component (500, 502, 504 in figure 9).

Regarding claim 8:

Crawford et al. further discloses wherein the plurality of transmit channels comprise a plurality of frequency channels (figure 9, par 0053, lines 1-12).

Regarding claim 10:

As shown in figures 1-13, Crawford et al. discloses a method of transmitting signals using a plurality of transmit channels (102 in figure 1), the method comprising:

- allocating the data to be transmitted among the plurality of transmit channels (102 in figure 1), wherein at least one of the plurality of transmit channels transports some

data that is not transmitted over all of the other of the plurality of transmit channels (101 in figure 1);

- for at least one set of at least two adjacent transmit channels, transmitting data over the set wherein at least some data is encoded in out-of-band subcarriers at frequencies between frequencies allocated to the at least two adjacent transmit channels (500, 502, 504 in figure 9).

Regarding claim 11:

As shown in figures 1-13, Crawford et al. discloses in a communications system having a channel divided into a plurality of adjacent frequency bands separated by out-of-band frequency ranges, wherein data is transmitted within the bands of the plurality of frequency bands, a method of increasing data capacity of the channel comprising:

- for data to be transmitted from a transmitter (102 in figure 1), allocating a first portion of the data among the plurality of transmit frequency bands and allocating a second portion of the data to at least one out-of-band frequency range when the first portion is allocated to adjacent bands (500, 502, 504 in figure 9), wherein the at least one out-of-band frequency range includes an out-of-band frequency range between the adjacent bands (figure 9);
- transmitting the first portion within the plurality of transmit frequency bands (figure 1); and
- transmitting the second portion within the at least one out-of-band frequency range (figure 9).

Regarding claim 12:

Crawford et al. further discloses:

- prior to transmitting at least the second portion of the data, transmitting one or more training symbols usable for a receiver to estimate transmission characteristics of the out-of-band frequency ranges (figure 9, par 0056, lines 1-8); and
- using received signal of the one or more training symbols to modify processing of a received signal corresponding to the second portion of the data (figure 5 and 6) to account for the transmission characteristics of the out-of-band frequency ranges (figure 9, par 0056, lines 1-8).

Regarding claim 20:

As shown in figures 1-13, Crawford et al. discloses a method of transmitting a packet, using a MIMO transmitter having a plurality of antennas, over a wireless network, the method comprising:

- obtaining data fields of a packet to be transmitted (figure 5 and 6);
- generating preamble fields of the packet to be transmitted (figure 5 and 6), including an extended mode preamble (322 in figure 5) distinguishable at a receiver from a conventional 802.11 a preamble, wherein a conventional 802.11 a receiver can decode one or more fields of the extended mode preamble (par 0055, lines 1-12, par 0057, lines 1-19); and
- transmitting the packet including the extended mode preamble (figure 5 and 6).

Regarding claim 22:

Crawford et al. further discloses wherein the fields of the extended code preamble include a modified long training sequence (long OFDM symbols is interpreted

to be long training pattern) pattern distinct from a conventional 802.11 a long training pattern (par 0056, lines 1-8).

Regarding claim 23:

Crawford et al. further discloses wherein the fields of the extended mode preamble include a modified signal field (322 in figure 5).

Regarding claim 28:

As shown in figures 1-13, Crawford et al. discloses a method of transmitting signals using a plurality of transmit channels, the method comprising:

- allocating the data to be transmitted among the plurality of transmit channels (102 in figure 1), wherein at least one of the plurality of transmit channels transports some data that is not transmitted over all of the other of the plurality of transmit channels (101 in figure 1);
- transmitting a modified preamble (322 in figure 5) from each of the plurality of transmit channels 102 in figure 1), wherein the modified preamble is usable for performing channel estimation and at least a first part of the modified preamble for at least a first of the plurality of transmit channels is a cyclically shifted version of a second part of the modified preamble (322 in figure 5) for at least a second of the plurality of transmit channels (par 0055, lines 1-12, par 0057, lines 1-19).

Regarding claim 31:

Crawford et al. further discloses further comprising MIMO synchronization (figure 4).

Regarding claim 32:

Crawford et al. further discloses wherein the data to be transmitted is allocated to a plurality of subcarriers, the subcarriers of the plurality of subcarriers are allocated among transmit channels, and each transmit channel is associated with a distinct antenna (par 0037, lines 5-12).

Regarding claim 33:

Crawford et al. further discloses wherein the data to be transmitted is allocated to a plurality of subcarriers and some of the subcarriers of the plurality of subcarriers are inverted relative to other subcarriers of the plurality of subcarriers (par 0037, lines 5-12).

Regarding claim 34:

Crawford et al. further discloses wherein the data to be transmitted is allocated to a plurality of subcarriers including at least one out-of-band subcarrier (500, 502, and 504 in figure 9).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 9 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crawford et al. in view of Moose et al. (US 2002/0065047).

Regarding claim 9:

Crawford et al. disclose all of the subject matter as described above except for specifically teaching wherein the plurality of frequency channels are adjacent 20 MHz channels.

However, Moose et al., in the same field of endeavor, teaches wherein the plurality of frequency channels are adjacent 20 MHz channels (paragraph 0007, lines 1-11).

One of ordinary skill in the art would have clearly recognized that IEEE 802.11a standardization committee selected coherent orthogonal frequency division multiplexing (OFDM) as the basis for a 5 GHz wireless local area network (WLAN) standard. This digital communication standard divides the 5150 MHz to 5350 MHz frequency band into eight 20-MHz communication channels. Each of these 20-MHz channels is composed of 52 narrow-band carriers. OFDM sends data in parallel across all of these carriers and aggregates the throughput. The standard supports data rates as high as 54 Mbps in 20 MHz channelization. To achieve the desired data rate, it would have been obvious to one ordinary skill in the art at the time the invention was made to use the IEEE 802.11a standard as taught by Moose et al. It is advantageous to use IEEE 802.11a standard, because it supports high data rate of up to 54 mbps and also we can achieve 20 MHz sampling rate.

Regarding claim 35:

Crawford et al. further discloses estimating channel (604 in figure 12A) response by:

- receiving signals and sampling for a long training symbol (long OFDM symbols is interpreted to be long training pattern) pattern distinct from a conventional 802.11 a long training pattern (par 0056, lines 1-8);
- computing a 64-point FFT (N-Point FFT is interpreted to be a 64-point FFT) of the received long training symbol (N-Point FFT in figure 12A);
- multiplying each subcarrier by known pilot values (figures 5 and 6).

Crawford et al. disclose all of the subject matter as described above except for specifically teaching computing an IFFT of the result of the multiplication, resulting in a 64-point impulse response estimate; isolating each of a plurality of impulse responses, one per MIMO transmitter; and deriving channel estimates for all subcarriers from the isolated impulse responses by taking a 64-point FFT of each of the plurality of impulse responses, where the sample values are appended by zero values to get 64 input values as needed.

However, Moose et al., in the same field of endeavor, computing an IFFT of the result of the multiplication, resulting in a 64-point impulse response estimate (paragraph 0024, lines 1-4); isolating each of a plurality of impulse responses, one per MIMO transmitter; and deriving channel estimates for all subcarriers from the isolated impulse responses by taking a 64-point FFT of each of the plurality of impulse responses, where the sample values are appended by zero values to get 64 input values as needed (par 0045).

One of ordinary skill in the art would have clearly recognized in order evaluate signals, the signal needs to be evaluated either in time domain or frequency domain.

To evaluate the signal in the desired domain a Fast Fourier Transform FFT or Inverse Fast Fourier Transform IFFT algorithm is used. To process 64 sample points at 20 MHz sampling rate and is called the OFDM FFT processing interval. Also the OFDM symbols can be generated by a length 64 inverse fast Fourier transform IFFT. To generate OFDM-MIMO symbol by a length of 64-point, it would have been obvious to one ordinary skill in the art at the time the invention was made to use the FFT and IFFT algorithm as taught by Moose et al. in synchronization and channel estimation system. Using FFT and IFFT are of great importance to a wide variety of applications such as digital signal processing.

8. Claim 13-19 and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crawford et al. in view of Stuber et al. (US 2003/0076777).

Regarding claim 13:

As shown in figures 1-13, Crawford et al. discloses a method of discriminating between a packet sent as a conventional 802.11a packet and a packet sent using an extended mode not normally supported under the conventional 802.11 a standard, the method comprising:

- receiving a signal from a wireless medium (figure 1), wherein the signal was transmitted from an extended mode transmitter as a packet wherein packet data

(probing sequence is interpreted to be packet data) is preceded by a packet preamble and wherein the packet preamble is generated from a cyclically shifted 802.11 a preamble (figure 5 and 6, par 0046, lines 1-13);

- a packet data sequence including a cyclically shifted 802.11 a preamble (figure 5 and 6) when receiving packet data from an extended mode transmitter and a conventional 802.11 a preamble when receiving packet data from a conventional 802.11 a transmitter (figure 1, par 0055, lines 1-12, par 0057, lines 1-19); and
- discriminating (diversity selection portion is interpreted to be discriminating) as to which type of packet was sent based on the received packet data sequence (322 in figure 5, par 0055, lines 1-12).

Crawford et al. disclose all of the subject matter as described above except for specifically teaching demodulating the signal to obtain a demodulated signal; decoding from the demodulated signal.

However, Stuber et al., in the same field of endeavor, teaches demodulating the signal to obtain a demodulated signal; decoding from the demodulated signal (22 and 25 in figure 1).

One of ordinary skill in the art would have clearly recognized that demodulation and decoding is the act of removing the modulation from an analog signal to get the original baseband signal back. Demodulating and decoding is necessary because the receiver system receives a modulated signal with specific characteristics and it needs to turn it to base-band. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to use demodulate/decoding the received signal

as taught by Stuber et al. in Apparatus and methods for providing efficient space-time structures for preambles, pilots and data for multi-input, multi-output communications systems. By demodulating/decoding the received signal, we can recover the original transmitted signal.

Regarding claim 14:

Crawford et al. further discloses wherein the extended mode includes at least a MIMO (OFDM is interpreted to be used in MIMO, see abstract) extended mode wherein the packet preamble is generated from the cyclically shifted 802.1 la preamble (figure 5 and 6).

Regarding claim 15:

Crawford et al. further discloses further comprising performing MIMO (OFDM is interpreted to be used in MIMO, see abstract) channel estimation using the received preamble data (604 in figure 12A).

Regarding claim 16:

Crawford et al. further discloses further comprising performing MIMO (OFDM is interpreted to be used in MIMO, see abstract) channel estimation using the received preamble data (604 in figure 12A).

Regarding claim 17:

Crawford et al. disclose all of the subject matter as described above except for specifically teaching wherein the signal transmitted from an extended mode transmitter is such that legacy devices can decode a signal field of the preamble.

However, Stuber et al., in the same field of endeavor, teaches wherein the signal transmitted from an extended mode transmitter is such that legacy devices can decode a signal field of the preamble (MIMO transmitter is interpreted to be an extended mode transmitter) (18 and 24 in figure 1, paragraph 0029, line 1-2).

One of ordinary skill in the art would have clearly recognized that demodulation and decoding is the act of removing the modulation from an analog signal to get the original baseband signal back. Demodulating and decoding is necessary because the receiver system receives a modulated signal with specific characteristics and it needs to turn it to base-band. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to use demodulate/decoding the received signal as taught by Stuber et al. in Apparatus and methods for providing efficient space-time structures for preambles, pilots and data for multi-input, multi-output communications systems. By demodulating/decoding the received signal, we can recover the original transmitted signal.

Regarding claim 18:

Crawford et al. further discloses the detecting (par 0041, lines 6-9) using at least one out-of-band subcarrier (figure 9).

Crawford et al. disclose all of the subject matter as described above except for specifically teaching detecting that the signal transmitted used from an extended mode transmitter using a MIMO mode.

However, Stuber et al., in the same field of endeavor, teaches detecting that the signal transmitted used from an extended mode transmitter using a MIMO mode (MIMO

transmitter is interpreted to be an extended mode transmitter) (18 and 24 in figure 1, paragraph 0029, line 1-2).

One of ordinary skill in the art would have clearly recognized that demodulation and decoding is the act of removing the modulation from an analog signal to get the original baseband signal back. Demodulating and decoding is necessary because the receiver system receives a modulated signal with specific characteristics and it needs to turn it to base-band. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to use demodulate/decoding the received signal as taught by Stuber et al. in Apparatus and methods for providing efficient space-time structures for preambles, pilots and data for multi-input, multi-output communications systems. By demodulating/decoding the received signal, we can recover the original transmitted signal.

Regarding claim 19:

Crawford et al. further discloses the detecting (par 0041, lines 6-9) including detecting a presence of cyclically shifted preamble components (figure 5 and 6).

Crawford et al. disclose all of the subject matter as described above except for specifically teaching detecting that the signal transmitted used from an extended mode transmitter using a MIMO mode.

However, Stuber et al., in the same field of endeavor, teaches detecting that the signal transmitted used from an extended mode transmitter using a MIMO mode (MIMO transmitter is interpreted to be an extended mode transmitter) (18 and 24 in figure 1, paragraph 0029, line 1-2).

One of ordinary skill in the art would have clearly recognized that demodulation and decoding is the act of removing the modulation from an analog signal to get the original baseband signal back. Demodulating and decoding is necessary because the receiver system receives a modulated signal with specific characteristics and it needs to turn it to base-band. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to use demodulate/decoding the received signal as taught by Stuber et al. in Apparatus and methods for providing efficient space-time structures for preambles, pilots and data for multi-input, multi-output communications systems. By demodulating/decoding the received signal, we can recover the original transmitted signal.

Regarding claim 24:

As shown in figures 1-13, Crawford et al. discloses a method of communicating a packet, using a MIMO transmitter having a plurality of antennas (102 in figure 1), over a wireless medium to a MIMO receiver (figure 1), the method comprising:

- obtaining data fields of a packet to be transmitted (figure 1);
- generating preamble fields of the packet to be transmitted, including an extended mode preamble (figures 5 and 6);
- transmitting the packet, including the extended mode preamble (322 in figure 5), as a signal into the wireless medium (figure 1, par 0009);
- receiving a representation of the signal from a wireless medium;
- a packet data sequence including data representing at least a portion of a preamble (figure 5 and 6);

- where the receiver is a MIMO receiver, processing the packet data sequence according to an extended mode operation (322 in figure 5); and
- where the receiver is a conventional 802.11 a receiver, processing the packet data sequence to determine at least one valid conventional 802.11 a preamble field and deferring further data reception related to that packet data sequence after determining, from the preamble, that the packet data sequence represents a packet not in conformance with a conventional 802.1 la packet (figure 5 and 6).

Crawford et al. disclose all of the subject matter as described above except for specifically teaching at a receiver, demodulating the signal to obtain a demodulated signal ; at the receiver, decoding, from the demodulated signal.

However, Stuber et al., in the same field of endeavor, teaches at a receiver, demodulating the signal to obtain a demodulated signal; at the receiver, decoding, from the demodulated signal (22 and 24 in figure 1).

One of ordinary skill in the art would have clearly recognized that demodulation and decoding is the act of removing the modulation from an analog signal to get the original baseband signal back. Demodulating and decoding is necessary because the receiver system receives a modulated signal with specific characteristics and it needs to turn it to base-band. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to use demodulate/decoding the received signal as taught by Stuber et al. in Apparatus and methods for providing efficient space-time structures for preambles, pilots and data for multi-input, multi-output communications

systems. By demodulating/decoding the received signal, we can recover the original transmitted signal.

Regarding claim 25:

Crawford et al. further discloses wherein the fields of the extended mode preamble include a modified short training sequence (306 in figure 5).

Regarding claim 26:

Crawford et al. further discloses wherein the fields of the extended mode preamble include a modified long training sequence (long OFDM symbols is interpreted to be long training pattern) pattern distinct from a conventional 802.11 a long training pattern (308 in figure 5, par 0056, lines 1-8).

Regarding claim 27:

Crawford et al. further discloses wherein the fields of the extended mode preamble include a modified signal field (322 in figure 5).

Allowable Subject Matter

9. Claims 4, 5, and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record, Crawford et al. does not teach or suggest wherein at least a part of the modified long training pattern has a low cross correlation with a corresponding part of the conventional 802.11 a pattern, thereby facilitating discrimination based on cross correlation.

The prior art of record, Crawford et al. also does not teach or suggest, wherein the first part and the second part comprise signal sequences with a low cross-correlation between long training symbols

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kabir A. Timory whose telephone number is 571-270-1674. The examiner can normally be reached on 6:30 AM - 3:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

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Kabir A. Timory
February 01, 2005

SHUWANG LIU
SUPERVISORY PATENT EXAMINER